The Taup Toolkit:
Flexible Seismic Travel-Time and Raypath Utilities

Version 1.0
Documentation

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verv

```
piglet
```

The usage is:

```
pig$t 7>t#up_$t$#s -h$lp
U$#g$: t#up_$t$#s [#rgum$nt$]
  or, for puri$t$, j#v# $du.$$.$i$.T#uP.T#uP_S$tS#s [#rgum$nt$]

Argum$nt$ #r$:
-ph ph$$s li$t     -- $omm# $p#r#t$d ph$$s li$t,
                      u$$ ph$$s-h to $p$$ify th$ $#s h$#d$r,
                      $$r[#[#[[, S$S-p    [#kq    [$S]
```

4 Phase

6 Programming Interface

In addition to the command line interface, there are three ways to access the toolkit from within other prog

```
(arrivals[i].getDist*180.0/M
```

T uPSetDepth sets the source depth within the model. A initialized TauP truct is passed as the first argument, with the source depth passed as the second. With the e ception of creating a new model, this is the most CPU intensive operation. The method signature is
int TauP

T uPGetArriv l- yP r m returns the ray parameter of the i arrival found wi
TauPCalculate, ab

7 Examples

Here is a walk through of a use of the tools on a UNIX system.

7.1 Velocity Model File

First, we want to create a model. There are several models contained within the TauP distribution, but for completeness we will create a new one from scratch.

A very simple model file might look like this:

```
0.0     5.0  3.0   2.7
20      5.0  3.0   2.7
20      6.5  3.7
```

```
filename = ./simpleMod.nd
Done reading velocity model.
Radius of model simpleMod is 6371.0
```

```
        l to list phases
        s for new station lat lon
        e for new event lat lon
        a for new azimuth
        b for new back azimuth
        m for new model or
        q to quit.

        Enter Distance or Option [hrplstaebmq]: h
        Enter Depth: 143.0
        Enter Distance or Option [hrplstaebmq]: e
        Enter phases (ie P,p,PcP,S): P,S,PcP,ScS,SKS,aS,SS,PKKP
        Enter Distance or Option [hrplstaebmq]: 75

        Model: iasp91Mod
        Distance   Depth   Phase   Travel    Ray Param   Purist    Purist
          (deg)     (km)   Name    Time (s)  p (s/deg)  Distance   Name
        ----------------------------------------------------------------
            75.0   143.0   P        608.33     5.71        75.0  = P
            75.0   143.0   PcP      700.51     4.31        75.0  = PcP
            75.0   143.0   S       1203.17    11k N ÆI c k-  .0. y  kIc p   y  p k cÆ  p ÆÆ      p k cÆ c p
.0    143.0
```

```
piglet 7>taup_pierce -mod simpleMod -h 143. -deg 75 \
? -ph P,S,PcP,ScS,SKS,pS,SS,PKKP -turn
> P at 686.33 seconds at 75.0 degrees for a 143. km deep source in the simpleMod model.
   37. 3 110.3
> S at 1 63.17 seconds at 75.0 degrees for a                                    M
```